

WHAT IS CLAIMED IS

1. A steel stud suitable for use in construction of thermally efficient buildings and comprising;
 - a web defining two edges;
 - a first right angular flange formed on one said edge;
 - a first angular edge strip formed along the free edge of said first right angular flange;
 - a second right angular flange formed on the other said edge;
 - a second angular edge strip formed along the free edge of said second right angular flange;

10 web openings of generally non-triangular shape formed through said web between said first and second right angular flanges;

edges of said openings being formed out of the plane of said web into generally right-angular flanges;

generally circular depressions formed in said web between said web openings and said right angular flanges; and,

depression openings formed within said depressions.
2. A steel stud as claimed in claim 1 and wherein said web between said web openings defines generally hour-glass shaped web portions, which are narrower at about the mid point of said web, and wherein said semi-circular openings are directed towards said narrower portions of said hour-glass shaped web portions.

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- 3 A steel stud as claimed in Claim 1 a first triangular tube formation formed on one said edge;

a second triangular tube formation formed on the other said edge; web openings of generally non-triangular shape formed through said web between said first and second triangular tube formations; edges of said openings being formed out of the plane of said web into generally right-angular edge flanges ; generally circular depressions formed in said web between said web openings and said triangular tube formations; depression openings formed within said depressions; and reinforcing flange ring-walls formed around said depression openings..

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4. A steel stud as claimed in claim 3 and wherein said web between said web openings defines generally transverse shaped web portions, which are narrower at about the mid point of said web, and wherein said depression openings are located adjacent each end of said narrower portions.

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5. A steel stud as claimed in claim 1 for use in forming a composite construction panel wherein the panel is formed with a thin panel of cast material, and a reinforcing grid of sheet metal studs wherein said reinforcement studs have embedment portions which are embedded in the cast panel, and wherein said steel stud includes,

an embedment flange portion formed along one edge of said web; a retention edge strip on said embedment flange portion formed out of the plane of said embedment flange portion; and,
a plurality of spaced apart embedment flange openings formed in said embedment flange portion .

6. A steel stud as claimed in claim 5 wherein said embedment flange portion is formed at an angle to said web and wherein said embedment flange openings are formed by a series of semi-arcuate openings located spaced apart lengthwise along
10 said embedment flange portion .

7. A steel stud as claimed in claim including flanges formed around said web openings

8. A steel stud as claimed in claim 7 and including generally circular depressions formed in said web between said web openings and said right angular flanges, and between said web openings and said embedment flange portions, and depression openings formed within said depressions.

9. A steel stud as claimed in claim 8 wherein said web between said web
openings defines generally hour-glass shaped web portions, which are narrower at
20 about the mid point of said web, and wherein said depression openings create further narrower portions of said hour-glass shaped web portions.

10. A steel stud as claimed in claim 9 and including a triangular tube formation formed on said free edge, having a first angled tube wall, a second transverse tube wall, and a return tube wall ;

a free edge of said return tube wall being fastened to said web;
an embedment flange portion formed along the opposite edge of said web;
a retention edge strip formed on said embedment flange portion and formed out of
the plane of said embedment flange portions; and,
a plurality of spaced apart flange openings formed in said embedment flange
portion .

11. A steel stud as claimed in claim 10 wherein said embedment flange portion
is formed at an angle to said web and wherein said embedment flange openings are
10 formed by a series of semi-arcuate openings located spaced apart lengthwise along
said embedment flange portion.

12. A steel stud as claimed in claim 11 and including web openings of generally
circular shape formed through said web between said embedment flange portions
and said free edge tubular formations, and edges of said circular openings being
formed out of the plane of said web, into a continuous annular ring.

13 A steel stud as claimed in claim 12 and including generally circular
depressions formed in said web between said web openings and said triangular
20 formation, and between said web openings and said embedment flange portions, and
depression openings formed within said depressions.

14. A steel stud as claimed in claim 13 wherein said web between said web
openings defines generally hour-glass shaped web portions, which are narrower at

about the mid point of said web, and wherein said depression openings define further narrower portions of said hour-glass shaped web portions.

15. A steel stud as claimed in claim 14 and including
a triangular tube formation formed on said free edge, having a first angled tube wall, a
second transverse tube wall, and a return tube wall ;
a free edge of said return tube wall being fastened to said web;
a series of generally V-shaped web portions extending from said free edge;
an apex on each of said V-shaped web portions;
an embedment portion formed on each said apex; and,
each said apex having an embedment opening formed therein.
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16. A steel stud as claimed in claim 15 and including web openings of generally circular shape formed through said web in said V-shaped web portions.and edges of said circular openings being formed out of the plane of said web, into a continuous annular ring.

17 A steel stud as claimed in claim 16 and including generally circular depressions formed in said V-shaped web portions between said web openings and
20 said triangular formation. and depression openings formed within said depressions.

18 The method or making a composite construction panel comprising the steps of;
assembling a plurality of reinforcing studs, each having webs with circular openings therethrough, in parallel spaced apart relation with said circular openings aligned with one another , and with cross members arranged transversely at the ends of said

parallel reinforcing studs thereby forming a grid of studs, said parallel reinforcing studs having embedment flange portions thereon;
pouring panel material into a form shaped to provide a planar cast panel;
placing reinforcing mesh in said panel material;
placing said grid of studs over said panel material in said form and lowering the same until said embedment flange portions of said reinforcing studs are at least partially immersed in said panel material;
allowing said panel material to cure, and removing said formed composite panel consisting of cured material with said grid of studs secured in and extending from said
10 panel.

19 The method or making a composite construction panel as claimed in claim 18 and wherein said reinforcing studs have web openings of generally circular shape formed through said web and edges of said circular openings being formed out of the plane of said web into a continuous annular ring.

20. The method or making a composite construction panel as claimed in claim 19 and wherein said reinforcing studs are formed with generally circular depressions formed alongside said web openings and depression openings formed within said
20 depressions.